Feb. 1, 1938. D. J. CAMPBELL ET AL 2,106,701

APPARATUS FOR COATING MOLDS

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Fig. 1

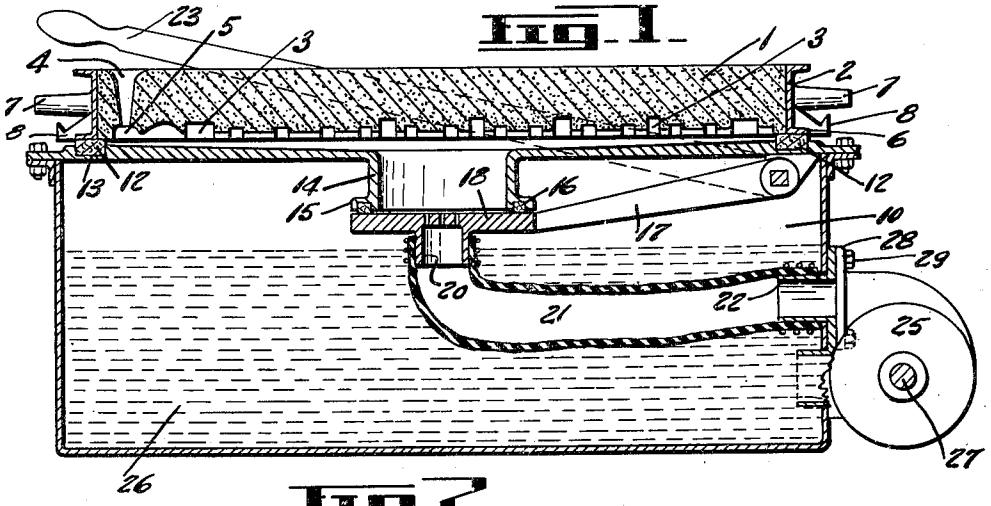

Fig. 2

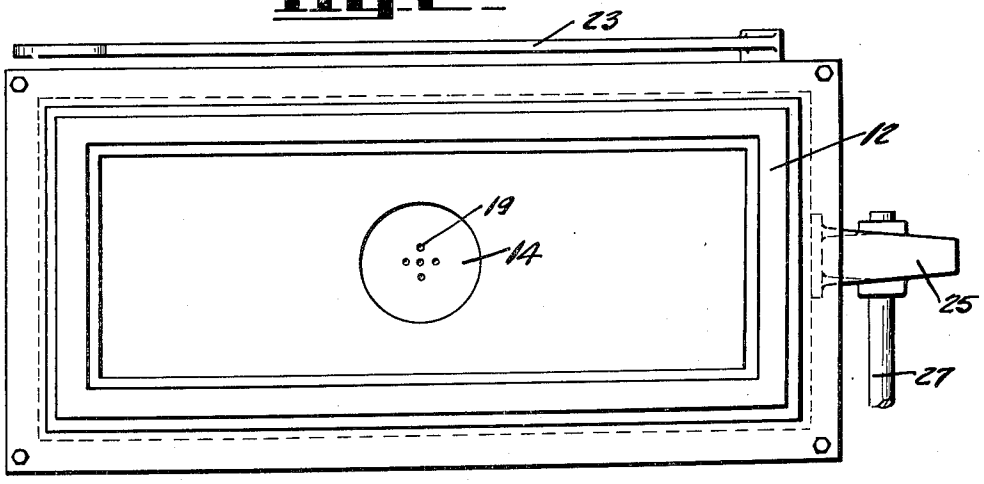

Fig. 3

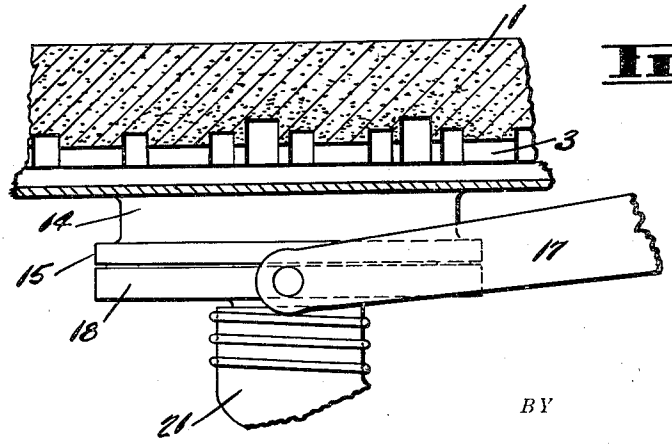

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Fig 4

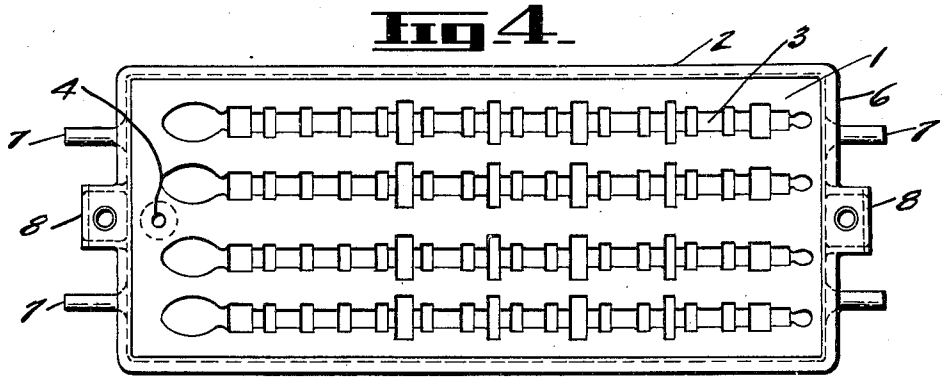


Fig 5

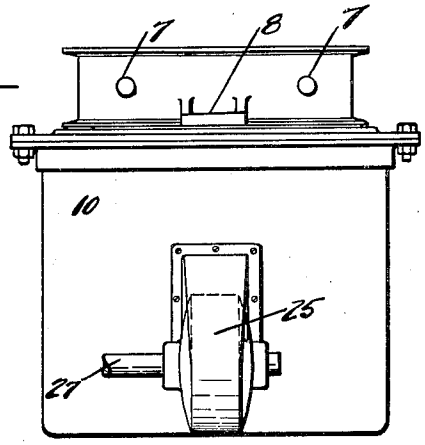
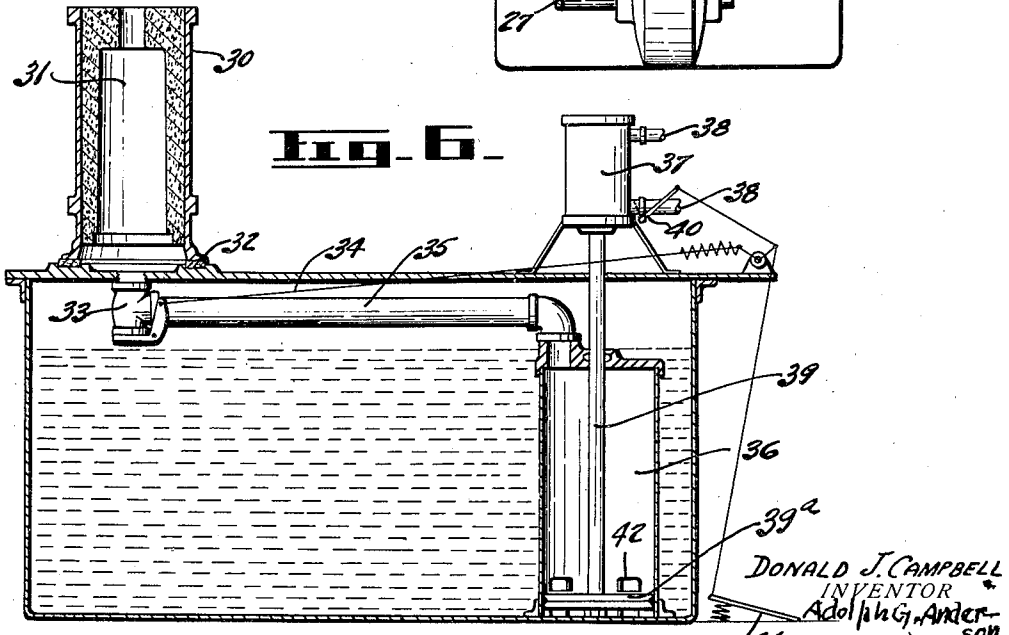


Fig 6



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APPARATUS FOR COATING MOLDS

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2 Claims. (Cl. 22—88)

This invention relates to metal founding, and is primarily concerned with a method and apparatus pertaining to the application of mold wash or facing to the interior surfaces of sand and other molds and cores used in the production of metal castings. The objects of invention are, a method and apparatus whereby a coating of mold wash or facing is applied to molds and the like more cheaply and quickly than heretofore, and whereby the wash coating will be evenly distributed throughout the entire interior surface of the mold casting cavities. These objects as well as others hereinafter appearing are attained by, and the invention finds preferable embodiment in the specifications hereof, and as illustrated by the accompanying drawings in which—

Fig. 1 is a part sectional view of the mold and preferred embodiment of the apparatus by which the mold wash is applied to a mold wherein to cast engine camshafts.

Fig. 2 is a plan view of the said apparatus, with the mold removed.

Fig. 3 is an enlarged sectional view of a portion of the mold with the wash trap operating lever and trap in elevation.

Fig. 4 is a plan view of the cavity face of a mold in which to cast engine camshafts.

Fig. 5 is an end elevation of the apparatus by which the mold wash is applied.

Fig. 6 is a part sectional view of an embodiment of the apparatus arranged for coating the interior of a sleeve casting mold.

Throughout the several views of the drawings, similar characters refer to similar parts and referring thereto—

1 represents a sand cope portion of a mold in which to cast engine camshafts. 2 is a flask member in which is supported the sand 1 of the mold having mold cavities 3, metal pouring gate 4 and runner 5. The flask member 2 at its two open sides is provided with flanges 6 and at each end with handles 7 and assembly lugs 8 whereby the several sections of the mold can be clamped together to form the completed mold. The apparatus whereby the wash usually comprising a solution of water and plumbago is applied to the mold, consists of the container tank 10 having a top cover plate 11 with inclined top for draining surplus wash solution back into the tank 10 after the mold cavities 3 are coated. 12 is a soft pliable strip of packing extending unbroken at the sides on the cover 11 and resting in recess 13. At the under side of the cover plate and preferably mid-way of its length and breadth is a hollow extension 14 having flange 15 provided with packing 16 held in a retaining groove and at the under side of the flange 15 and held in engagement with the packing 16 by the lever 17 is a valve plate 18 having wash solution strainer holes 19 and extending flexible hose connecting flange 20 to which is connected flexible hose 21 with its opposite end connected to the inwardly extending flange 22 of the tank 10. The lever 17 carrying the valve plate 18 is operated to close the opening of the flange 15 and extension 14 by hand lever 23 through the squared shaft 24 to which levers 17 and 23 are secured. 25 represents a rotary pump by which the wash solution 26 is pumped from the tank 10 into the space above the cover plate 11 and against the interior of the mold cavities as 3 and 5 of the mold. Shaft 27 drives the pump in its pumping operation from a suitable source of power supply. The pump 25 has its suction 28 extending into the tank 10 near the bottom but spaced therefrom to prevent clogging of the pump by settlings of solids in the wash solution and is secured to the tank 10 by bolts 29. Fig. 6 represents the present invention arranged for wash coating the interior of a mold for centrifugally casting engine cylinder sleeves. 30 represents a cylindrical flask in which is formed mold 31 resting on packing 32, the wash solution being supplied to the mold through a leaf valve 33 operated by wire 34, the wash solution being forced through the piping 35 by a piston lift pump 36 operated by pressure fluid operating against a piston in the cylinder 37, 38 being the inlet and exhaust for the pressure fluid to and from the cylinder 37, piston rod 39 connects a piston in the cylinder 37 with the piston 39*a*; control of pressure fluid to and from the cylinder 37 by a wire connected to the control valves 40 and to the foot pedal 41. Ports 42 admit wash solution to the pump cylinder above the piston 44 and forced thereby through the pipe and valve 33 into the mold when the piston 39*a* is raised by the rod 39.

In carrying out the present invention, having provided the apparatus substantially as disclosed and the mold in which to cast metal parts such as camshafts, crankshafts, cylinder sleeves or other iron and steel parts, a solution of plumbago or other suitable material and liquid is prepared and placed in the container tank in sufficient quantity to at least reach above the intake of the pump. The section of mold to be coated is placed on the cover plate and resting on the packing which prevents leakage of wash solution from between the mold section and the cover

plate. The pump having been started, the valve plate is raised to contact the packing **16** of the flange **15** closing the discharge from the pump back to the container tank which closure causes the wash solution to be raised upwardly into the mold cavity. The valve plate **18** is then lowered by depressing the lever **23** and the wash solution permitted to drain from the top of the cover plate **11** back into the container tank, leaving a coating of wash solution on the surfaces of the mold cavities. The mold section is then removed; the surplus wash solution adhering too thickly to the edges of the mold cavities is removed with a brush or otherwise. The wash solution coating of the mold cavities is then dried after which when the mold sections have been clamped with their cavities adjoining the mold is ready for casting metal therein. At present the usual practice of applying wash coatings to molds is by brush as in painting or by spraying with an air brush. Both of these methods are unsatisfactory as they leave heavy ridges of thick wash solution in the mold which show on the casting after it is made, or the wash coating is thin in places allowing the molten metal to burn the mold sand onto the metal and causing a roughness of the casting surface.

The invention having been described, what we claim is:—

1. An apparatus for coating the interior of sand molds, which apparatus consists of a wash solution container tank having a cover provided with a valve controlled opening therethrough for delivering wash solution from the said tank to the top thereof and to a mold supported thereon, a compressible packing interposed between the said cover and said mold for sealingly supporting the mold on said cover, a valve for controlling the flow of wash solution through the said opening through said cover, a lever pivotly connected to said valve for operating the valve to close and open the said opening, a turnable shaft to which the said lever is secured and a second lever secured to said shaft in spaced relation to the first named lever for turning the shaft and thereby operating the first named lever and said valve, a fluid pump having a suction member extending into the solution container tank and having its discharge flexibly connected to a downward extending flange on said valve.

2. An apparatus for coating the interior of molds, which apparatus consists of a wash solution container tank having a cover provided with a hole therethrough for delivering mold wash solution from said container tank to the top of said cover and to the mold thereon, a valve for closing the said hole to prevent the flow of wash solution from the top of said cover into said container tank, and a pump having its discharge flange flexibly connected to the said valve by a flexible hose and its suction connected with the said container tank below the discharge of said pump.

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